



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/439,776	11/12/1999	RODNEY VAN METER III	Q99-1113-US1	2099

7590 06/28/2002

JOHN C CHEN
PATENT LAW MANAGER
QUANTUM CORPORATION
500 MCCARTHY BOULEVARD
MILPITAS, CA 95035

EXAMINER

TU, CHRISTINE TRINH LE

ART UNIT

PAPER NUMBER

2133

DATE MAILED: 06/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/439,776

Applicant(s)

VAN METER, RODNEY

Examiner

Christine T. Tu

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 17-19 and 25-26 is/are rejected.
- 7) ☒ Claim(s) 5-16, 20-24 and 27-29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit:

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 17-19 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brady (5,373,512).

Claims 1-3, 17-18 and 25:

Brady discloses the invention substantially as claimed. Brady shows (figure 2) a redundant disk array comprises a channel interface (20) and a plurality of identical memories (21a & 21b). Each memory (21) comprises a memory array (20) and a memory controller (22) that includes a parity generator. The n data blocks, each are supplied via channel interface (20) to a bus (24) and directed to input ports g of each memory (21). One of the memories (21) will have been preselected, assumed as the memory 21a, to calculate parity for this particular data transfer, and the memory 21a would perform an XOR to the contents of a portion or location P of the memory array (23) allocated for parity calculation. The allocated location P either will have been pre-initialized to zero to enable the XOR to occur, or the first block to arrive will be stored with a conventional store, precluding the need for pre-initialization. As the data blocks continue to arrive via channel interface (20) they will be XOR'd one-by-one to the partial

Art Unit:

parity as calculated at the allocated location P. When the last of the n blocks is transmitted, parity will immediately be available in the memory 21a and be written to the appropriate disk file 25' (figure 2, column 3 line 31-column 4 line 3).

Brady does not explicitly teach that the feature of storing checksum values in a checksum list. Brady, however, teaches (figure 3) that in a "write parity mode", one set of control signals from the control signal line (38) identify the location P at which parity calculation is to be updated and that an XOR write operation is to be performed. Another set of control signals identifies the location D from which data is to be read into the write buffer (35). The data written into write buffer (36) from locations P and D is synchronized. When the nth bytes from location P line up with the data from location D, the synchronized m-bit data words will be moved from write buffer (35) into disk parity generator (34). Generator (34) will have to XOR the two m-bit data words together bit-by-bit, then transmit the XOR'd m-bit data word to ECC generator (32). Once the parity is calculated, the data and memory array parity are transmitted via write path (30) into the memory array (23) and there stored in location P (figure 3, column 4 line 47-column 5 line 29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose to store Brady's partial parity into a memory which also stores data words, or to store Brady's partial parity into a separate memory. The artisan

Art Unit:

would have been motivated to do so because such choice would not change the content of Brady's partial parity.

Claims 19 and 26:

Brady teaches that a controller (26) provides control signals for carrying out parity calculation and for writing the accumulate parity to the appropriate disk file (25') after the last of the n blocks is transmitted (column 3 lines 48-52 and lines 59-63).

3. Claims 4-16, 20-24 and 27-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine T. L. Tu whose telephone number is (703) 305-9689. The examiner can normally be reached on Monday to Thursday from 8:30 A.M. to 6:00 P.M.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady, can be reached on (703) 305-9595.
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Art Unit:

6. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

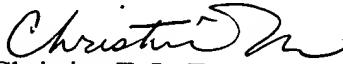
or faxed to:

(703) 746-7238 (for formal after-final communications intended for entry),
(703) 746-7239 (for formal communications intended for entry),

Or:

(703) 746-7240 (for informal or draft communications, please label
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA. 22202, Sixth Floor (Receptionist).


Christine T. L. Tu
Primary Patent Examiner
Art Unit 2133

June 17, 2002